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## Influence of novel zirconia surface treatments to improve zirconia-veneer

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The interface between Y-TZP ceramic cores and ceramic material is considered to be the weak link responsible for the high degree of veneer chipping in zirconia based restorations leading to prosthetic failures in clinical practice. Although many different techniques have been introduced to optimize zirconia veneer bond, the best method for durable zirconia restorations is still a matter of controversy. The purpose of the study was to compare different surface pretreatment methods to monolithic zirconia substrate. A single type of Y-TZP ceramic material (BruxZir Solid Zirconia, Glidewell, USA Glidewell) was used in this study. Cylindrical monolithic zirconia blocks (n=50) were prepared. Zirconia surfaces were subjected to the following processes: without treatment; sandblasting air-abraded with with crushed glass beads; Air abrasion with alumina 50 µm; Air abrasion with alumina 90µm; Laser irradiated with femto laser. All specimens were covered with 5x5 mm veneering ceramic. All samples were loaded at the interface until fracture utilizing a shear device at a 0.5 mm/min cross-head speed. Results were statistically processed following one-way ANOVA. Alumina blasted and laser treated groups showed significant higher values than other groups after. As-sintered and glass blasted surfaces showed similar results without significant differences. Within the limitations of this study, novel femto laser treatment might be an alternative to sandblasting procedures improving the zirconia veneer bond.

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